

PATENT SPECIFICATION

DRAWINGS ATTACHED

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The Inventor of this invention in the sense of being the actual deviser thereof within the meaning of Sect 16 of the Patents Act 1949 is:—OTTO KUTTLER, a citizen of the West German Republic of 19, Hellbergstrasse, 785, Lorrach/Baden, West Germany.

COMPLETE SPECIFICATION

An Improved Fastening Device

We, A. RAYMOND, a French body Corpor-ate of 113, Cours Serriat, Grenoble, Isere, France, do hereby declare the invention, for which we pray that a patent may be granted to us and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to an improved fastening device which is particularly, but not exclusively suitable for attaching a sheet of resiliently deformable material in superimposed relation to a relatively rigid support.

Dished resilient washers formed with a curved edge and resilient lugs for gripping the shank of a stud are well known. These locking washers are in common use where an upholstery cover is fastened to a non-resilient underlay, for instance in frames for vehicle seats. These known devices are adequate for this type of fastening, but they cannot be used if the underlay is resilient and a large amount of give is required in the upholstery, since the stud is not moveable with respect to the washer and the spacing between the washer and the head of the stud is too small to provide the resilient contraction and expansion of the upholstery which is required.

It is an object of the present invention to provide a fastening device which will overcome the above described disadvantages of known stud and locking washer arrangements.

According to the invention there is provided a fastening device comprising a washer having a central aperture, a spacing member comprising a tubular sleeve located through the aperture in the washer, an external flange at one end of the sleeve seated against the washer and an internal projection at the other end of the sleeve, and a stud comprising a

head and a shank having an enlarged portion adjacent the tip, the enlarged portion being snap-engagable into the sleeve, past the internal projection thereon, and the shank of the stud being freely moveable in the sleeve within limits set by engagement of the under surface of the head of the stud against the said other end of the sleeve and the enlarged portion of the shank against the internal projection.

According to a further aspect of the invention there is provided an assembly of a sheet of resiliently deformable material attached in superimposed relation to a relatively rigid support by a fastening device as defined in the preceding paragraph wherein the sleeve extends through an aperture in the support and into the material, the washer bears against the outer surface of the support, the undersurface of the head of the stud bears against the outer surface of the sheet and the shank extends through the sheet into the sleeve with the enlarged portion located behind the internal projection of the sleeve to resist withdrawal of the shank of the stud therefrom.

The extent to which the sheet of resilient material can be pressed towards the support depends on the distance which the stud can travel relative to the sleeve. On the other hand the extent to which the sheet of resilient material can expand is determined by the length of the sleeve and the distance between the undersurface of the head and the enlarged portion of the shank. Thus, it is possible to alter the resilience at any one time of the sheet by altering either of these dimensions.

A preferred form of the invention is des-

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cribed below with reference to the accompanying drawings in which:—

Figure 1 is an underplan of a washer and spacing member assembled together.

5 Figure 2 is an elevation, partly in section of a fastening device comprising the washer and spacing member of Figure 1 and a stud therefor.

10 Figure 3 is an elevation, partly in section, of a resilient sheet of material attached to a support with the aid of the fastening device of Figure 2; and

15 Figure 4 is an elevation similar to Figure 3, except that the sheet of upholstery is partially compressed towards the support.

20 A fastening device is indicated generally at 1 in Figure 2 and comprises a washer 2 having a curved periphery 3, which acts to strengthen the washer, a spacing member in the form of a tubular sleeve 7 and a stud 20. The washer 2 has a central aperture 4 and means in the form of integral resilient supports 5, spaced around the rim of the aperture 4, which engage the tubular sleeve 7 and resist

25 its withdrawal therefrom. The tubular sleeve 7 has an external flange 8 at one end of the sleeve which seats against the washer 2, the other end of the sleeve being partially closed by an internal projection 9 in the form of four resilient lugs 10 spaced around the circumference of the sleeve and directed radially inwardly of the sleeve and rearwardly towards the flanged end of the sleeve.

30 The stud 20 has a head portion 13, a shank 12 projecting from the undersurface 17 of the head portion and an enlarged portion 11 adjacent the tip of the shank 12 which is adapted to snap-engage through the lugs 10 and into the sleeve 7. When the enlarged portion 11 is engaged within the sleeve the stud is free to move relative to the sleeve within limits set in one direction by the engagement of the portion 11 against the lugs 10 and in the other direction by engagement

35 of the undersurface 17 of the head 13 against the end of the sleeve 7. The fastening device 1 is used, as shown in Figures 3 and 4 to attach a sheet of resiliently deformable upholstery material 18 to a relatively rigid supporting board 14. The board 14 is provided with an aperture 15 and the sleeve 7 is inserted through the aperture 15, after it has been attached to the washer 2, so that the washer is seated against the outer surface 16 of the supporting board 14. The upholstery material 18 is then placed over the projecting sleeve 7 and the shank 12 of the stud 20 is pressed down through the material 18 and snap-engaged into the sleeve

60 7. It will be seen that the tip of the stud 20

is pointed and will thus pierce the upholstery material relatively easily. Preferably, the depth of the material 18 is such that it is compressed slightly when the tip of the stud 65 is engaged in the sleeve 7.

When the material 18 is attached to the supporting board 14 by the fastening device 1, the material can be compressed towards the board 14, as shown in Figure 4, to an extent determined by the length between the undersurface 17 of the head of the stud and the end portion of the sleeve and will return to its original shape under the natural resili- 70 ence in the material. The resiliency of the material 18 can be reduced by shortening the shank 12 of the stud 20 so as to increase the initial compression of the material. 75

WHAT WE CLAIM IS:—

1. A fastening device comprising a washer 80 having a central aperture, a spacing member comprising a tubular sleeve located through the aperture in the washer, an external flange at one end of the sleeve seated against the washer and an internal projection at the other end of the sleeve, and a stud comprising a head and a shank having an enlarged portion adjacent the tip, the enlarged tip portion being snap-engagable into the sleeve, part 85 the internal projection thereon, and the shank of the stud being freely moveable in the sleeve within limits set by engagement of the undersurface of the head of the stud against the said other end of the sleeve and the enlarged portion of the shank against the internal projection. 90

2. A fastening device as claimed in claim 1, wherein the rim of the aperture in the washer is formed with resilient supports which resist withdrawal of the sleeve of the spacing 100 member therefrom.

3. A fastening device as claimed in either preceding claim, wherein the internal projection at the said other end of the sleeve comprises a plurality of lugs projecting inwardly of the sleeve and inclined rearwardly towards the said one end of the sleeve. 105

4. An assembly of a sheet of resiliently deformable material attached in superimposed relation to a relatively rigid support by a fastening device as claimed in any preceding claim, wherein the sleeve extends through an aperture in the support and into the material, the washer bears against the outer surface of the support, the undersurface of the head of the stud bears against the outer surface of the sheet and the shank extends through the sheet and into the sleeve with the enlarged portion located behind the internal projection of the sleeve to resist withdrawal 120 of the shank of the stud therefrom.

5. A fastening device substantially as des-

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COMPLETE SPECIFICATION

1 SHEET

This drawing is a reproduction of the Original in a reduced scale

FIG.1

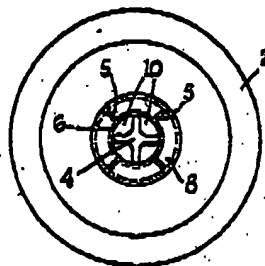


FIG.2

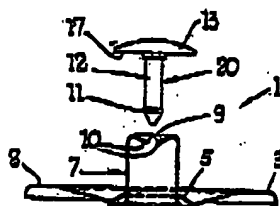


FIG.3

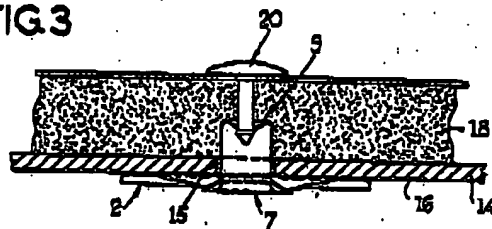
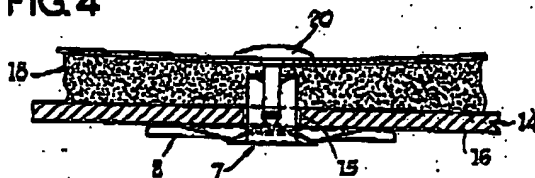


FIG.4



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cribed herein with reference to Figures 1 and
2 of the accompanying drawings.

6. An assembly substantially as described
herein with reference to Figures 3 and 4 of
5 the accompanying drawings.

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